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## Change in newspaper coverage of schizophrenia in Japan over 20-year period

Ai Aoki<sup>a,\*</sup>, Yuta Aoki<sup>a,b</sup>, Robert Goulden<sup>c,d</sup>, Kiyoto Kasai<sup>a</sup>, Graham Thornicroft<sup>e</sup>, Claire Henderson<sup>e</sup>

<sup>a</sup> Department of Neuropsychiatry, Graduate School of Medicine, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8655, Japan

<sup>b</sup> The Child Study Center at NYU Langone Medical Center, New York, NY 10016, USA

<sup>c</sup> Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, 1020 Pine Avenue West, Montreal, Quebec H3A 2B4, Canada

<sup>d</sup> Newcastle Medical School, Newcastle University, Newcastle upon Tyne NE2 4HH, United Kingdom

<sup>e</sup> Health Service and Population Research Department, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London SE5 8AF, United Kingdom

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### ABSTRACT

In Japan, schizophrenia was renamed in 2002 to reduce the stigma that people with schizophrenia are dangerous. However there has been little research on the potential anti-stigma effect of renaming. The present study aimed to examine whether portrayals of schizophrenia in newspapers as dangerous have been varied across renaming of the disease. To achieve this goal, newspaper articles containing the previous and new Japanese names for schizophrenia, published in the decades before and after the renaming, were identified through the database of the three largest Japanese national broadsheets. Identified articles were divided into two categories: a negative category, including a subcategory “danger”; and a positive category. Articles containing bipolar disorder were adopted as a control. The ratio of the number of articles on schizophrenia and danger to that of bipolar disorder was analysed as a variable of interest. The trend of this ratio was investigated to examine whether portrayals of schizophrenia changed after renaming. The search identified 4677 articles on schizophrenia, 53.0% of which were categorised as negative and 38.9% as danger. The search identified 525 articles on bipolar disorder, 24.6% of which were categorised as negative and 11.2% as danger. There was an increase of the ratio before schizophrenia was renamed ( $r = 0.54$ ,  $p = 0.104$ ), and a significant decrease after renaming ( $r = -0.69$ ,  $p = 0.028$ ). Fisher's  $r$ -to- $z$  transformation demonstrated a significant change in the trend of the ratio across renaming ( $Z = 2.72$ ,  $p = 0.007$ ). Renaming schizophrenia might be associated with mitigation in potentially stigmatised depiction of schizophrenia associated with violence in newspaper reports.

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### 1. Introduction

Individuals with schizophrenia suffer from stigma all over the world (Ando et al., 2013; Thornicroft et al., 2009). Previous studies in Japan, Australia, and the United States have highlighted that a large part of the general population held stereotypes that individuals with schizophrenia were dangerous (Corrigan et al., 2002; Griffiths et al., 2006). In newspapers, 14–49% of articles on mental illness were linked to danger (Goulden et al., 2011; Magliano et al., 2011; Nawkova et al., 2012; Whitley and Berry, 2013). Furthermore, newspaper coverage of schizophrenia has been shown to be disproportionately negative compared with other psychiatric conditions in previous studies in the United Kingdom (Goulden et al., 2011; Thornicroft et al., 2013), Belgium (Thys et al., 2013), Czech Republic, Croatia, and Slovakia (Nawkova et al., 2012). Media coverage and the attitudes of the general public toward mental illness influence each other (Goulden et al., 2011; Klin and Lemish, 2008; Stout et al., 2004). Among some media sources,

newspaper coverage was used to investigate the effect of anti-stigma campaigns in some countries (Thornicroft et al., 2013; Whitley and Berry, 2013). This is because newspaper coverage may be considered to be an index of wider public opinion and it is suitable for research as material can be collected over a number of years to analyse trends.

In Japan, in 1990s, the stereotype that individuals with schizophrenia are dangerous was of particular interest, as several murders in the late 1980s were committed by criminals who might have had a diagnosis of schizophrenia. In 1993, the National Federation of Families with Mentally Ill (NFFM, “Zenkoku-seishin-shogaisha-kazokukai-rengoukai”) concerned that stigma was increasing, and requested that the Japanese Society of Psychiatry and Neurology (JSPN) consider renaming schizophrenia. They felt that the previous Japanese name for schizophrenia “seishin-bunretsu-byo”, which literally means “mind-split-disease”, may evoke a stereotype that the mind of individuals with schizophrenia was split, meaning that they were unpredictable, untreatable, and dangerous (Sato, 2002). In 2002, the JSPN accepted their request and changed the Japanese name for schizophrenia to “togo-sitcho-syo”, which literally means “integration disorder.” The new name was less stigmatising because it gave an impression that

\* Corresponding author.

E-mail address: [aaoki-tky@umin.ac.jp](mailto:aaoki-tky@umin.ac.jp) (A. Aoki).

the condition was not irreversible but controllable. Renaming was accompanied by public education effort explaining why the name had to be changed. This was the first nationwide anti-stigma intervention in Japan. Also, this was the first attempt in the world to reduce stigma by renaming schizophrenia (Desapriya and Iwase, 2002; Kim, 2002; Sato, 2006). Following Japan's example, similar approaches were adopted in South Korea in 2012 (Lee et al., 2013) and Taiwan in 2014 (Sartorius et al., 2014). In the present study, we aimed to examine whether social attitude toward individuals with schizophrenia changed over 20-year period, the decades before and after renaming by quantitatively investigating newspaper coverage about schizophrenia in Japan. Based on previous studies that found articles linking schizophrenia and danger were the most stigmatizing (Stout et al., 2004), and the intent of the NFFM and JSPN that renaming schizophrenia would reverse the increase in stigma based on this stereotype, we hypothesised that increasing stigma against people with schizophrenia had been mitigated after renaming.

## 2. Materials and methods

### 2.1. Design

The present study is a retrospective survey that aimed to examine how newspaper articles associated schizophrenia and danger over a 20-year period: 10 years before and 10 years after renaming of schizophrenia, as compared with the control condition (bipolar disorder). During the study period, studies shows that social attitude towards psychiatric illnesses, not only schizophrenia, had changed greatly. For example, the number of outpatients using psychiatry services in Japan has almost doubled (Ministry of Health, Labour and Welfare, 1990–2011). A previous study in the United Kingdom demonstrated that the number of articles on mental illnesses has also almost doubled from 1992 to 2008 (Goulden et al., 2011). These factors may confound time-related changes in the social attitudes specific to schizophrenia. Therefore, bipolar disorder was used as a control to investigate the change of newspaper coverage of schizophrenia, as it has a similar prevalence to schizophrenia, and was not renamed during the study period. The ethics committee of the University of Tokyo Hospital approved this study (approval no. 10672).

### 2.2. Study period

We searched for articles published from 1 August 1992 to 31 July 2012.

### 2.3. Target newspapers

The search for articles was conducted using the electronic databases of the three Japanese nationwide broadsheets that had the biggest circulation: Yomiuri (right-leaning), Asahi (left-leaning), and Mainichi (left-leaning). Although there are five nationwide broadsheets in Japan (Yomiuri, Asahi, Mainichi, Sankei, and Nihon-Keizai), Sankei was excluded because the online database was not fully available in the study period, and Nihon-Keizai was excluded because it is an economic newspaper.

### 2.4. Screening of the articles

Eligible articles were screened using the official databases provided by the three newspaper companies: “Yomidasu-rekishikan” (<http://www.yomiuri.co.jp/database/rekishikan/>, accessed: 1 April 2014) by Yomiuri; “Kikuzo-II” (<http://database.asahi.com/library2/>, accessed: 1 April 2014) by Asahi; and “Maisaku” (<http://mainichi.jp/contents/edu/maisaku/>, accessed: 1 April 2014) by Mainichi. The previous name for schizophrenia (Seishin-bunretsu-byo), its abbreviated name (Bunretsu-byo), and the new name for schizophrenia (Togo-sitcho-syo) were

searched for in all three databases. There is no abbreviation for the new name. Although bipolar disorder was not renamed, both bipolar disorder (Soukyokusei-shogai) and manic-depressive disorder (Sou-utsu-byo) are used to describe bipolar disorder in Japan. There may be difference in social attitude toward these two terms (Elision et al., 2015). However majority of the identified articles used the term manic-depressive disorder (Sou-utsu-byo) and preliminary analysis showed no difference in distribution of categorisation between these two terms. Both bipolar disorder and manic-depressive disorder were therefore used as search terms.

### 2.5. Inclusion criteria

Newspaper articles that include the previous and new names of schizophrenia and bipolar disorder were included in the present study (Supplementary information).

### 2.6. Exclusion criteria

Articles containing some references to schizophrenia or bipolar disorder, but that did not focus on either disorder were excluded. Articles of which full texts were not available because of copyright were excluded. Metaphorical usage of schizophrenia and bipolar disorder was also excluded from the main analysis. Metaphorical usage includes using the term schizophrenia or bipolar disorder when making non-human references or nonclinical mental status (Supplementary information).

### 2.7. Coding frame

The main theme of each article was coded based on a coding frame used in previous research (Goulden et al., 2011). First, themes were divided into negative and positive categories from a stigmatisation perspective. The negative category was divided into four subcategories: danger; suicide and self-injury; criminal victimisation and severe mistreatment; and strange, inept, or burdensome. The positive category was also divided into four subcategories: explaining schizophrenia/bipolar disorder; health service inadequacies and improvements; stigma, discrimination, and public education; and renaming (Supplementary information).

First, one author (AA) coded all potentially relevant articles. To assess reliability, another author (YA) independently coded 10% of all articles. Inter-rater reliability was measured by Cohen's Kappa statistic. The Kappa score was calculated as  $K = (P(A) - P(E)) / (1 - P(E))$ , with  $P(A)$  proportion of agreement and  $P(E)$  expected probability of agreement by chance. A Kappa score above 0.75 was considered to be excellent agreement (Kirkwood and Sterne, 2003). Potential disagreement was resolved by discussion between these two authors. One author (AA) conducted the entire coding process again to ensure that the conclusion of the discussion was concordant with the original assignment of articles.

### 2.8. Statistical analysis

#### 2.8.1. Change in articles that linked schizophrenia and danger across renaming

To investigate the change in trend before and after renaming, the 20-year study period was divided into two decades, period before renaming; from 1 August 1992 to 31 July 2002 and period after renaming; from 1 August 2002 to 31 July 2012. To examine the effect of renaming, changes in articles on bipolar disorder were taken as the control. The ratio (number of articles on schizophrenia and danger in a year)/(number of articles on bipolar disorder and danger in a year) was used as a variable of interest. As there were some years that contained no articles on bipolar disorder and danger, one was added to the number of articles on both disorders in each year to avoid a

denominator of zero. Pearson's correlation analyses were performed between the ratio and number of years passed. Fisher's *r*-to-*z* transformation was performed to examine the difference in correlations between the two periods. Given the *a priori* hypothesis that the ratio of articles on schizophrenia and danger to that of bipolar disorder increased before renaming and decreased after renaming, the threshold for statistical significance for articles on danger was set at  $p < 0.05$ .

### 2.8.2. Difference in trend of other categories across renaming

Ratios were calculated for the total number of articles, number of articles categorised negative and positive and all the subcategories except danger. For subcategories that did not relate to the hypothesis, the Bonferroni method was applied to correct multiple comparisons. Statistical thresholds for significance were set at  $p < 0.007$  (0.05/7: total number of subcategories in both the negative and positive categories). For categories, such as all articles, and the negative and positive categories, we adopted  $p < 0.017$  (0.05/3, number of large divisions) for statistical significance.

### 2.8.3. Comparison between schizophrenia and bipolar disorder

To determine whether there was a significant difference between schizophrenia and bipolar disorder in the proportion of articles linking danger, we performed a chi-square test. As this was a confirmation analysis of the previous analyses, statistical significance was set at  $p < 0.05$ .

## 3. Results

### 3.1. Schizophrenia

The search over the three electronic databases yielded 5045 potentially relevant articles, of which 4918 articles were available. Of the available articles, 4693 were eligible for inclusion and 225 articles were excluded as they did not focus on schizophrenia. Sixteen articles contained metaphorical usage of the term schizophrenia and were discarded. A total of 4677 articles were included in the analysis: 1241 articles for the period before renaming and 3436 articles for the period after renaming (Supplementary Fig. 1). After the renaming of schizophrenia in 2002, few articles used the previous name for schizophrenia without including the new name (Supplementary Fig. 3). In addition, only a few articles adopted both the new and previous names for schizophrenia after the renaming, indicating that the newspapers made a quick transition to the new name (Supplementary Fig. 3).

**Table 1**  
Classification of articles containing schizophrenia.

Category	Entire period <sup>a</sup>	Period before renaming <sup>b</sup>	Period after renaming <sup>c</sup>
Negative	53.00%	56.06%	51.89%
Positive	47.00%	43.94%	48.11%
Negative subcategory			
Danger	38.94%	43.21%	37.4%
Suicide and self-injury	0.81%	0.73%	0.84%
Criminal victimisation and severe mistreatment	9.11%	7.11%	9.84%
Strange, inept, or burdensome	4.13%	5.01%	3.81%
Positive subcategory			
Explaining schizophrenia/bipolar disorder	14.51%	15.99%	13.97%
Health service inadequacies and improvement	16.71%	10.10%	19.09%
Stigma, discrimination, and public education	14.33%	14.22%	14.38%
Renaming	1.45%	3.63%	0.67%

<sup>a</sup> From 08/1992 to 07/2012.

<sup>b</sup> From 08/1992 to 07/2002.

<sup>c</sup> From 08/2002 to 07/2012.

Of the articles on schizophrenia, 53.0% were categorised as negative (56.1% in the period before renaming and 51.9% in the period after renaming), while 47.0% of the articles were categorised as positive, (43.9% before renaming and 48.1% after renaming) (Table 1). A total of 38.9% of all articles were on danger (43.2% before renaming and 37.4% after renaming) (Table 1). Danger constituted the largest subcategory (Fig. 1).

### 3.2. Bipolar disorder

We identified 625 potentially relevant articles on bipolar disorder in the three electronic databases, of which 590 articles were available. Of the available articles, 533 were eligible for analysis; and 57 were excluded as they did not focus on bipolar disorder. In addition, eight articles contained metaphorical usage of bipolar disorder. Therefore, 525 articles were included in the analysis (186 articles before the renaming of schizophrenia and 339 articles after renaming) (Supplementary Fig. 2). Of the articles containing bipolar disorder, 24.6% were categorised as negative (18.8% before renaming and 27.7% after renaming), and 75.4% were categorised as positive (81.2% before renaming and 72.3% after renaming) (Supplementary Table 1). Of the bipolar disorder articles, 11.2% were on danger (7.5% before renaming and 13.3% after renaming) (Supplementary Table 1).

### 3.3. Inter-rater reliability

The reliability check of the assignment of articles to subcategories (10% of the articles) yielded a Kappa score of 0.73 (fair to good agreement). For binary categorisation, the reliability check yielded a Kappa score of 0.93 (excellent). For the danger subcategory, the reliability check yielded a Kappa score of 0.99 (excellent).

### 3.4. Change in trend of articles linking schizophrenia and danger

There was a non-significant increase in the ratio of the number of articles on schizophrenia and danger compared with bipolar disorder over time before renaming ( $r = 0.54$ ,  $R^2 = 0.30$ ,  $SD = 14.69$ ,  $p = 0.104$ ). In contrast, there was a significant decrease over time after renaming ( $r = -0.69$ ,  $R^2 = 0.47$ ,  $SD = 15.83$ ,  $p = 0.028$ ). Fisher's *r*-to-*z* transformation demonstrated a significant change of trend in the ratio of articles on danger before and after renaming ( $Z = 2.72$ ,  $p = 0.007$ ).

### 3.5. Difference in trend in ratios of other categories

Our analyses found no significant change of trend in ratios across renaming in all articles and in the positive and negative categories: for all articles (from  $r = 0.31$ ,  $R^2 = 0.09$ ,  $SD = 3.24$ ,  $p = 0.390$  to  $r = -0.20$ ,  $R^2 = 0.04$ ,  $SD = 2.75$ ,  $p = 0.589$ ,  $Z = 0.96$ ,  $p = 0.337$ ), in the negative category (from  $r = 0.21$ ,  $R^2 = 0.04$ ,  $SD = 19.09$ ,  $p = 0.560$  to  $r = -0.49$ ,  $R^2 = 0.24$ ,  $SD = 8.20$ ,  $p = 0.153$ ,  $Z = 1.40$ ,  $p = 0.162$ ) and the positive category (from  $r = 0.44$ ,  $R^2 = 0.19$ ,  $SD = 1.31$ ,  $p = 0.204$  to  $r = -0.12$ ,  $R^2 = 0.01$ ,  $SD = 2.30$ ,  $p = 0.744$ ,  $Z = 1.10$ ,  $p = 0.269$ ).

For the negative subcategories other than danger, there were no significant changes in the trends of ratio (Supplementary Table 2, Supplementary Fig. 5). In addition, no positive subcategory demonstrated significant changes in the trends of ratio (Supplementary Table 2, Supplementary Fig. 5).

### 3.6. Comparison between schizophrenia and bipolar disorder during entire study period

A chi-square test demonstrated a significant difference in the proportion of articles on danger and schizophrenia and the proportion of articles on danger and bipolar disorder (38.9% vs. 11.2%,  $p < 0.001$ ).



### 3.7. Supplementary analyses to corroborate the main findings

The robustness of the decline in trend of ratio of the number of articles on schizophrenia and danger compared with that of articles on bipolar disorder is reinforced by additional analyses. For example, the ratio was highest in 2002, which could be an outlier accounting for the significant change. However, an analysis that excluded 2002, comparing ten years before renaming and nine years after renaming, replicated the significance of the result ( $Z = 2.16, p = 0.031$ ), indicating that the result is not only due to the effect of outlier. Furthermore, we tried analysing the change in trend of the ratio by dividing the 20-year period into nine and 11 years (dividing at the year 2001), and into 11 and nine years (dividing at the year 2003), and found that the present result (dividing at the year 2002) showed the largest effect size. In addition, an analysis discarding the first and last year (reducing the years of interest from 20 to 18) also replicated the statistical conclusion. Last, in the present analysis, we added one to the number of articles for both schizophrenia and bipolar disorder, to avoid a denominator of zero. Additional analyses that added 0.5 or two to the number of articles for both disorders replicated the result (Supplementary information).

## 4. Discussion

During study period, there was an increase of the ratio of articles on schizophrenia and danger to that of bipolar disorder during the first decade, and a significant decrease during the second decade. Fisher's  $r$ -to- $z$  transformation demonstrated a significant change in the trend of the ratio between the two decades, from increasing to decreasing.

Our results support the hypothesis that there was a change in newspaper coverage of schizophrenia that individuals with schizophrenia were dangerous between the two decades.

From an epidemiological viewpoint, the number of reports on individual who behaved dangerously towards others or themselves increased during the same period from 5544 to 18,031 reports (Ministry of Health, Labour and Welfare, 1992–2012). In addition, the number of mandatory hospitalisations increased during the same period from 2530 to 5818 (Ministry of Health, Labour and Welfare, 1992–2012). In addition, the proportion of schizophrenia and bipolar disorder among the arrests of individuals with mental illness has not changed dramatically, such as about 60% and 6% for schizophrenia and bipolar disorder, respectively (Ministry of Justice, 1993–2013). These epidemiological reports suggest that the present finding is not consistent with epidemiological data.

Our results also demonstrated that there was a negative change in newspaper coverage of bipolar disorder. It should be noted that the number of articles on bipolar disorder and danger increased during the study period. It might reflect the change in public knowledge on psychiatric illnesses. Before, people had little knowledge or prejudice

about bipolar disorder and had prejudice on schizophrenia that individuals with schizophrenia were dangerous. However people began to have more knowledge on variety of psychiatry illnesses these days on both positive and negative aspects. There was also a possibility that the renaming of schizophrenia might have led to an increase in the extent to which bipolar disorder is linked to violence, and this changed the newspaper coverage of bipolar disorder, but there had not been any explanation that compared schizophrenia to other psychiatric conditions in terms of danger so that the linkage between bipolar disorder and danger strengthened.

There are some previous studies that investigated effect of renaming. In one study, the authors recruited 68 non-medical undergraduate students and evaluated impact of renaming to find that the previous term is associated with criminal and the association was weakened by renaming (Takahashi et al., 2009). Another study conducted in the UK also showed that “integration disorder” is less associated with dangerousness compared with “schizophrenia” (Ellison et al., 2015) among over 1600 laymen. The present study replicated these findings in the general population in media coverage.

### 4.1. Limitations of the study

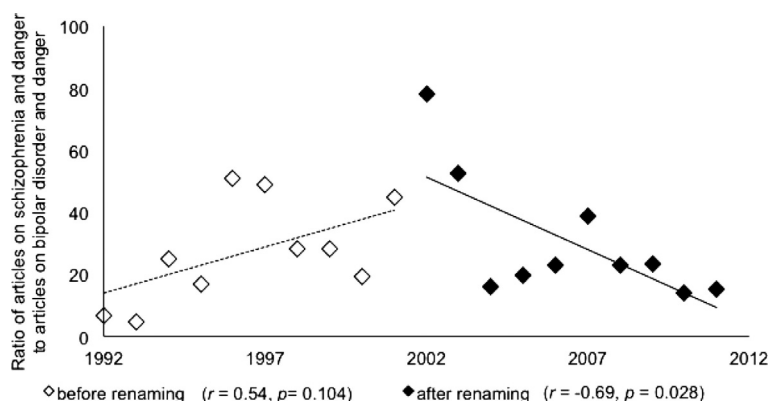
There are some limitations in our analysis. First, we included only three broadsheets, although their circulation rate is high. However regional newspapers and tabloids may represent opinions that were not covered by these three broadsheets. Unfortunately, databases of these publications were not available. Second, although investigation of newspaper coverage is a common strategy to survey public opinion and structural stigma (Stout et al., 2004), it was not possible to directly investigate the causal relationship between newspaper coverage and renaming of schizophrenia. Third, the nature of this method indicates that it was not possible to search euphemistic expressions that link mental illness and danger. In light of the fact in newspaper articles mental disorders are often described indirectly, such as “doubt of mental illness” or “a history of psychological problems” rather than “diagnosis of schizophrenia,” the present method may underestimate influence of negative articles.

### 4.2. Conclusion

By examining the newspaper coverage over a 20-year period, we have shown that the stigmatising articles that linked schizophrenia and danger were increasing before renaming but started to decrease after renaming compared to control condition.

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**Fig. 1.** Change in trend of the ratio of articles containing schizophrenia and danger to that of bipolar disorder (from  $r = 0.54, R^2 = 0.30, SD = 14.69, p = 0.104$  to  $r = -0.69, R^2 = 0.47, SD = 15.83, p = 0.028, Z = 2.72, p = 0.007$ ).

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#### Contributors

AA, YA and CH designed this study. AA collected data. AA and YA performed data analysis. RG originally made the method (coding frame) used in data analysis and AA and YA modified the coding frame in order to adjust it to Japanese condition. AA, YA and CH interpreted the data. AA, YA wrote the manuscript. RG, KK and GT also took part in writing paper. AA and YA equally contribute to this work. All authors contributed to and have approved the final manuscript.

#### Conflict of interest

AA received the 2015 JSPN International Presentation Award from the JSNP for the presentation related to this study.

YA received the 2015 JSPN Award for Special Contributions to Psychiatric Research from the JSNP for other studies.

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#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.schres.2016.04.026>.

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